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Two new species of *Spadicoides* from southern China

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ABSTRACT — *Spadicoides bawanglingensis* sp. nov. and *S. longchiensis* sp. nov. are described and illustrated from plant debris in natural areas of southern China. The type specimens are deposited in HSAUP (Herbarium of Department of Plant Pathology, Shandong Agricultural University) and HMAS (Mycological Herbarium, Institute of Microbiology, Chinese Academy of Sciences).

KEY WORDS — anamorphic fungi, taxonomy

Introduction

Spadicoides was established by Hughes (1958) with *S. bina* (Corda) S. Hughes as the type species. The genus is characterized by distinct, single, erect, straight or flexuous, branched or unbranched conidiophores with polytretic, terminal or intercalary conidiogenous cells that produce solitary, acropleurogenous, euseptate, variously shaped conidia (Ellis 1971, Kuthubutheen & Nawawi 1991). Thirty-four species have been accepted in *Spadicoides* (Mycobank 2013), seven of which have been described from China (Zhou et al. 1999, Wong et al. 2002, Ho et al. 2002, Cai et al. 2004, Li et al. 2010, Ma et al. 2010, 2012a).

Fungal diversity in China is high but still mostly unexplored. We have previously described several new species from Hainan and Sichuan Province (Zhang et al. 2009, Ma et al. 2012b,c, Ren et al. 2012). During our ongoing survey of anamorphic fungi associated with plant debris in tropical and subtropical forests of southern China, two new species with morphological characteristics of *Spadicoides* were collected on dead stems.

***Spadicoides bawanglingensis* J.W. Xia & X.G. Zhang, sp. nov.**

FIG. 1

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Differs from all other *Spadicoides* species with obclavate conidia by its larger conidia with a long rostrum (beak or apical prolongation).

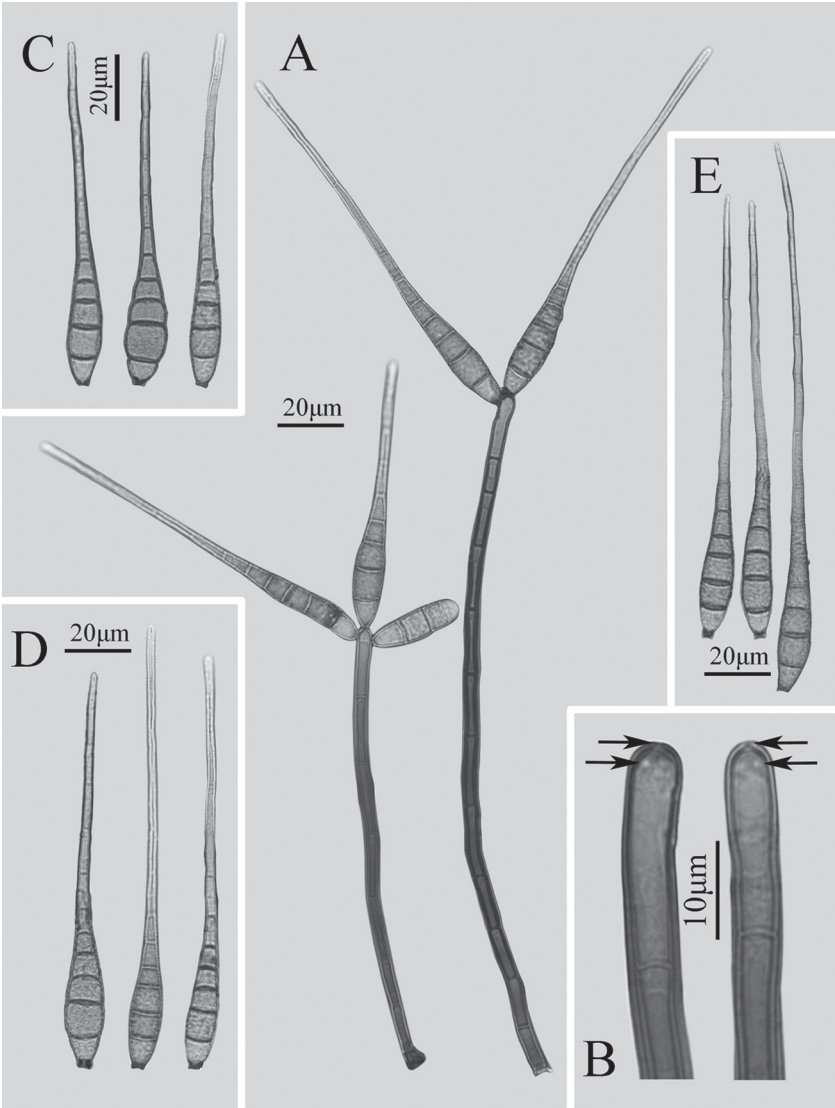


FIG. 1. *Spadicoides bawanglingensis* (holotype, HSAUP H6028). A. Conidiophores with conidia. B. Conidiogenous loci (arrowed). C–E. Conidia.

TYPE: China, Hainan Province: tropical forest of Bawangling, on dead stems of an unidentified broad-leaved tree, 16 Aug 2011, J.W. Xia (**Holotype**, HSAUP H6028; **isotype**, HMAS 243424).

ETYMOLOGY: in reference to the type locality.

COLONIES on natural substrate effuse, dark brown, hairy. Mycelium partly superficial, partly immersed in the substratum, composed of septate, pale brown, smooth hyphae, 2–2.5 μm wide. CONIDIOPHORES differentiated, mononematous, unbranched, erect, straight or slightly flexuous, cylindrical, smooth, thick-walled, brown, 7–14-septate, 130–210 $\times$ 3.5–6 μm . CONIDIOGENOUS CELLS polytretic, integrated, terminal and intercalary, cylindrical, smooth, pale brown to brown. CONIDIA acropleurogenous, solitary, verrucose, 9–12-euseptate, obclavate, pale brown to brown, 98–166 μm long (rostrum included), 8.5–12.5 μm wide, 2.5–4.5 μm wide at the truncate base, apex extended into a pale brown to subhyaline, euseptate rostrum, 52–100 $\times$ 1–3 μm .

TABLE 1. Morphological comparison of *Spadicoides* species with obclavate conidia.*

SPECIES	CONIDIOPHORES (μm)	CONIDIA			
		WALL; COLOR	SIZE (μm)	SEPTA (#)	APEX; BASE
<i>S. bambusicola</i> ³	150–350 $\times$ 4–5	Verrucose; one color	30–72.5 $\times$ 5–7.5	5–7	Subacute; obconically truncate
<i>S. bawanglingensis</i>	130–210 $\times$ 3.5–6	Verrucose; one color	98–166 $\times$ 8.5–12.5	9–12	Rostrate; truncate
<i>S. heterocolorata</i> ¹	<420 $\times$ 6–10	Smooth; versicolored	16–25 $\times$ 3.5–5	Mostly 1	Slightly tapering; slightly protruding
<i>S. obclavata</i> ²	<550 $\times$ 5–8 (base), 4–5 (apex)	Smooth; versicolored	16–22 $\times$ 4–6	Mostly 2	Tapering; rounded
<i>S. palmicola</i> ¹	<780 $\times$ 7–15 (base), 4–5.5 (apex)	Smooth; versicolored	25–70 $\times$ 5–7	Mostly 4 or 5	Subacute, often rostrate; obconically truncate

* Data from ¹ Goh & Hyde (1999), ² Kuthubutheen & Nawawi (1991), and ³ Zhou et al. (1999).

COMMENTS – The conidiophores and conidia morphologies of *S. bawanglingensis* and four other *Spadicoides* species with obclavate conidia are compared in TABLE 1. *Spadicoides bambusicola* D.Q. Zhou et al., *S. heterocolorata* (R.F. Castañeda et al.) Goh & K.D. Hyde, *S. obclavata* Kuthub. & Nawawi, and *S. palmicola* Goh & K.D. Hyde can all be separated from *S. bawanglingensis* by their smaller conidia with fewer septa.

***Spadicoides longchiensis* J.W. Xia & X.G. Zhang, sp. nov.**

FIG. 2

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Differs from all other *Spadicoides* species by its oval to reniform conidia.

TYPE: China, Sichuan Province: national forest park of Longchi, on dead stems of unidentified broad-leaved tree, 17 Apr 2012, J.W. Xia (**Holotype**, HSAUP H6246; **isotype**, HMAS 243425).

ETYMOLOGY: in reference to the type locality.

COLONIES effuse on natural substrate, dark brown, hairy. Mycelium partly superficial, partly immersed. Hyphae branched, septate, pale brown, smooth.

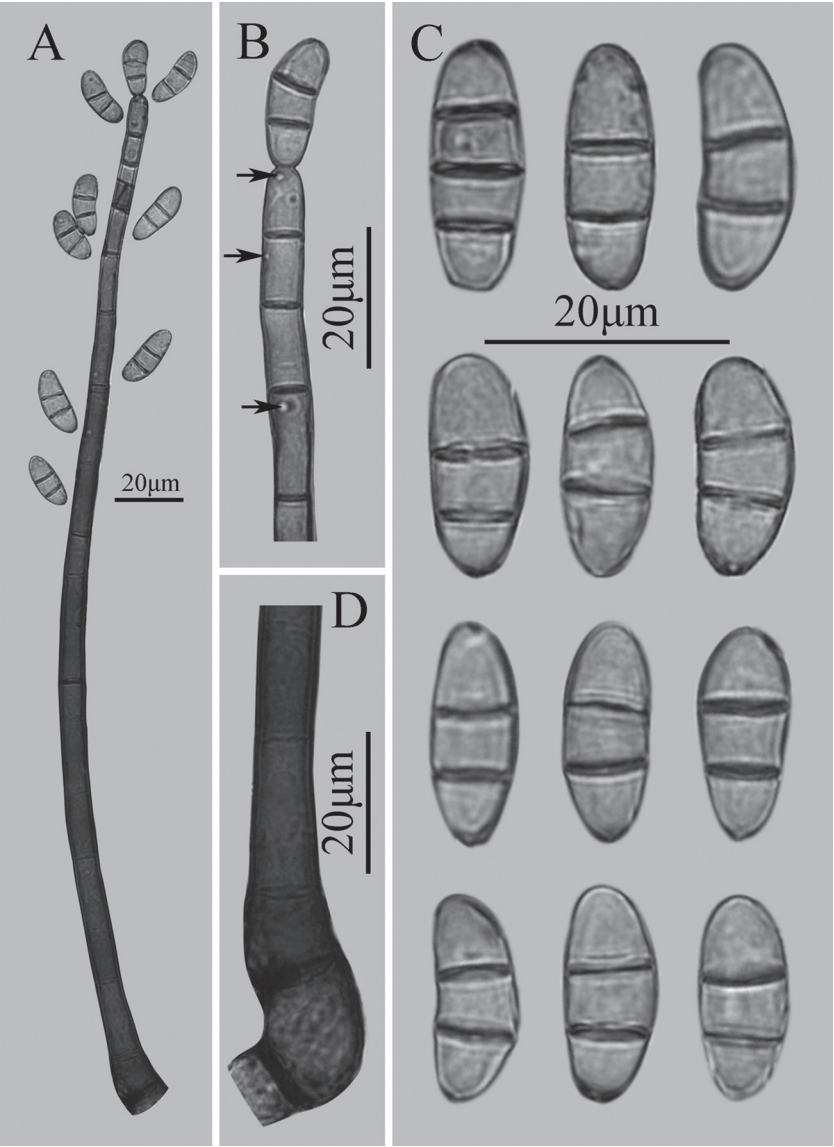


FIG. 2. *Spadicoides longchiensis* (holotype, HSAUP H6246). A. Conidiophore with conidia. B. Conidiogenous cells, conidiogenous loci (arrowed) and conidia. C. Conidia. D. Conidiophore basal cell.

CONIDIOPHORES macronematous, mononematous, single, unbranched, erect, straight or slightly flexuous, cylindrical, smooth, thick-walled, brown, 9–14-septate, $200\text{--}300 \times 5\text{--}8.5 \mu\text{m}$. CONIDIOGENOUS CELLS polytretic, integrated, terminal and intercalary, cylindrical, smooth, pale brown to brown. CONIDIA acropleurogenous, solitary, rounded at both ends, oval to reniform, 2–(3)-euseptate, mostly 2-euseptate, subhyaline to pale brown, smooth, $16\text{--}23 \mu\text{m}$ long, $6.5\text{--}8 \mu\text{m}$ wide in the broadest part.

COMMENTS – *Spadicoides longchiensis* resembles *S. klotzschii* S. Hughes in having smooth 2-septate conidia, but *S. klotzschii* differs by its smaller, clavate to ellipsoidal, versicolored conidia ($10\text{--}13 \times 4\text{--}5.5 \mu\text{m}$; Hughes 1973).

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